

**FPTT TIMETABLE SCHEDULING SYSTEM USING
GENETIC ALGORITHM**

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JUDUL: **FPTT TIMETABLE SCHEDULING SYSTEM USING GENETIC ALGORITHM**

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**FPTT TIMETABLE SCHEDULING SYSTEM USING
GENETIC ALGORITHM**

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The report is submitted in partial fulfillment of the requirements for the Bachelor of
Computer Science (Artificial Intelligence)

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2011**

DECLARATION

I hereby declare that this project report entitled
**FPTT TIMETABLE SCHEDULING SYSTEM USING
GENETIC ALGORITHM**

is written by me and is my own effort and that no part has been plagiarized
without citations.

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DEDICATION

To my beloved parents (Chiam Mui Hock and Chung Aik Choo), supervisor (CIK NUZULHA KHILWANI BINTI IBRAHIM), FPTT Staff (Cik Nurul Nadiah binti Mohd Noor), lecturers, and my friends for giving assistant and guideline to complete this project successfully.

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ABSTRACT

Timetable scheduling is categorized as one of the hardest problem. The factor that makes it categorized in that area is because their constraints and the way to get the feasible and optimized schedule by satisfying those constraints and it also already known as NP Complete problem. In this study, the problem of class timetabling translated into two categories of constraints, which are hard and soft constraints, then technically designed into specific representation of Genetic Algorithm (GA) before generating the schedule after steps of the evolution process with few genetic operators such as crossover and mutation among chromosomes generations. The optimized schedule using Genetic Algorithm which is belongs to the larger class of Evolutionary Computing (EC), is the final solution we achieved. The system is developed using Hypertext Preprocessor (PHP) as the programming language and the MySQL as the database which used to store all the system data. The test strategies that use to test the system after implementation is black-box testing The testing procedures that used in testing the system are code debugging, functionality testing and security testing. As a conclusion, the proposed system in this study has fulfilled the study objectives. The Genetic Algorithm (GA) technique performs well in optimizing Timetable Scheduling. For further improvement, more research on artificial intelligent (AI) technique has to be made so that suitable technique is used for future system. The administrator module can include more functions so that the administrators can manage the webpage easily.

ABSTRAK

Penjadualan jadual waktu telah dikategorikan sebagai salah satu masalah yang paling sukar. Faktor yg menjadikan ia dikategorikan dalam kumpulan itu adalah kerana kekangan-kekangannya dan cara untuk mendapatkan jadual yang sesuai dan optimum dengan memenuhi kekangan dan ia juga sudah dikenali sebagai bukan poninomial (NP) lengkap. Dalam Kajian ini, masalah jadual waktu kelas ditukarkan kepada dua kategori kekakang iaitu kekangan keras (*hard constraint*) dan kekangan lembut (*soft constraint*) kemudian direka bentuk secara teknikal kepada perwakilan tertentu Alogritma Genetik (GA) sebelum menjana jadual selepas langkah langkah proses evolusi dengan beberapa operator genetik seperti *crossover* dan mutasi kromosom di kalangan generasi kromosom. Jadual yang dioptimumkan dengan menggunakan Algoritma Genetik yang tergolong dalam kelas yang lebih besar Pengkomputeran Evolusi adalah penyelesaian yang terakhir yang dicapai. Sistem ini dibangunkan *Hypertext Preprocessor (PHP)* sebagai bahasa pengaturcaraan dan pangkalan data MySQL yang digunakan untuk menyimpan semua data sistem. Strategi ujian yang digunakan untuk menguji sistem selepas pelaksanaan adalah hitam kotak ujian Prosedur ujian yang digunakan dalam ujian sistem ini adalah kod debugging, ujian kefungsiian dan ujian keselamatan. Sebagai kesimpulan, sistem yang dicadangkan dalam kajian ini telah memenuhi objektif kajian. Teknik Algoritma Genetik ini (GA), teknik melakukan dengan baik dalam mengoptimumkan Penjadualan Jadual. Untuk penambahbaikan akan datang penyelidikan lanjut mengenai teknik AI telah dibuat supaya teknik yang sesuai digunakan untuk sistem masa depan. Modul pentadbir boleh menambah dalam fungsi supaya pentadbir boleh menguruskan laman web dengan mudah.

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LIST OF ABBREVIATIONS

UTeM	-	Universiti Teknikal Malaysia Melaka
PHP	-	Hypertext Preprocessor
FPTT	-	Fakulti Pengurusan Teknologi & Teknousahawan
GA	-	Genetic Algorithm
UML	-	Unified Modeling Language
NP	-	Non Polynomial
ERD	-	Entity Relationship Diagram
FPTTSY	-	FPTT Timetable Scheduling System

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